



Source: <http://users.owt.com/chubbard/gcdam/highres/dam08.jpg>

# Tennessee Valley Authority

# Overview

- Purpose
- Location
- TVA timeline
- Power Generation
- Political
- Economic Impact
- Environmental Impact
- Social Impact
- Recent Developments

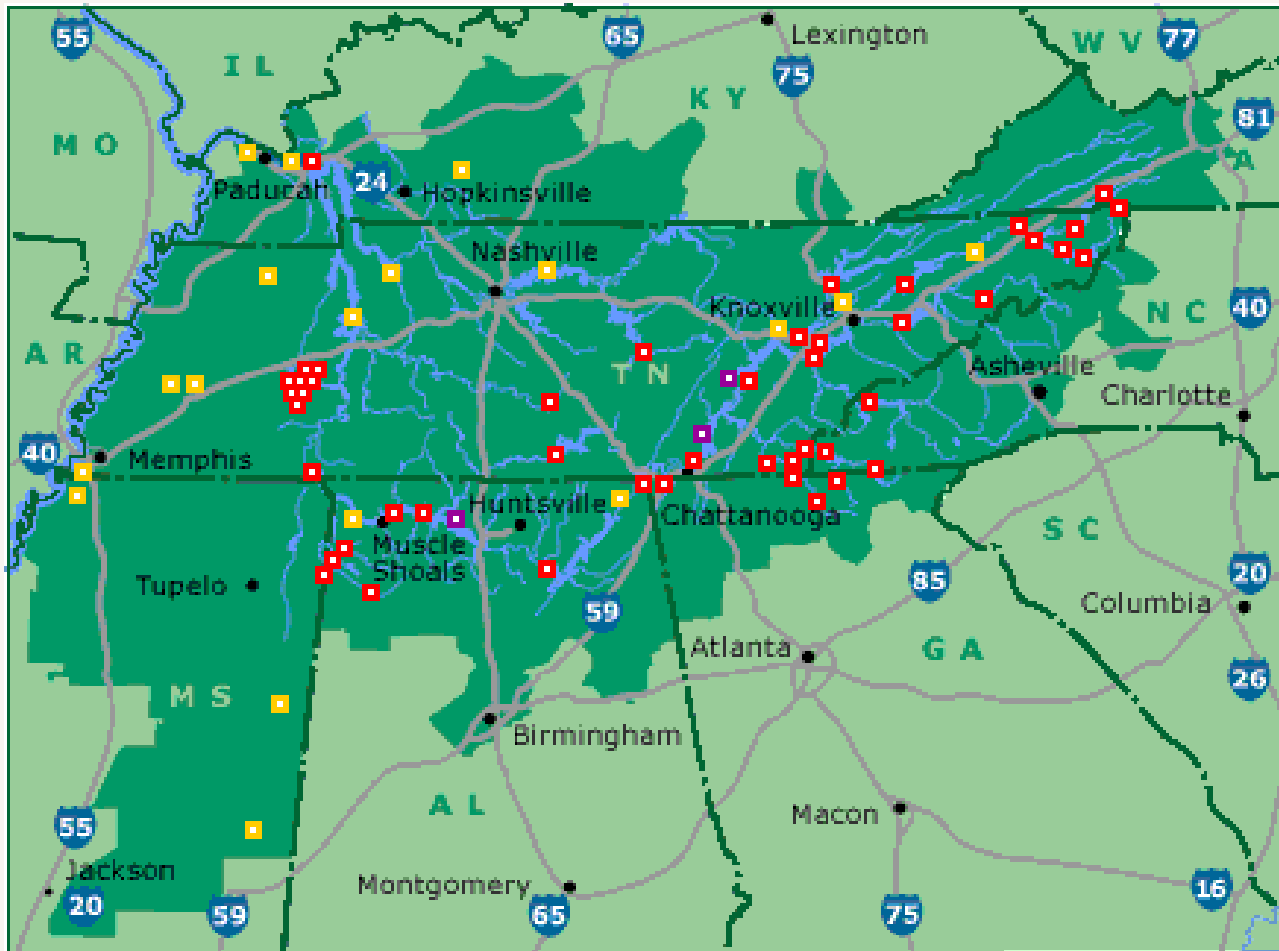


# Purpose

- Deal with problems affecting the Tennessee Valley
  - ▣ Flood control
  - ▣ Replant forests
  - ▣ Cheap electric power
  - ▣ Improve navigation along the Tennessee River
- TVA Act was signed in 1933 by Franklin D Roosevelt



# Location



Source: tva.com



# Time Line

- **1930's:**
  - **Developed fertilizers and taught farmers to improve crop yields.**
  - **Replanting of forests**
  - **Electricity generation from dams in the area**
  - **Electricity drew industries into the area**
- **1940's**
  - **world war 2 & the need for aluminum, therefore energy**
  - **Largest hydropower construction project at the time**
  - **Employment 28000**
  - **Electricity generation from dams in the area**
- **1950's**
  - **650 mile navigation channel that was the nations largest energy supplier**
- **1960's**
  - **Began construction of nuclear power plants as more economic source of power**



# Power Generation

- Sources: hydro, fossil, nuclear & renewable
- 29 hydro electric dams; 11 coal fired (2 combined cycle, 8 combustion-turbine); 3 nuclear; 16 solar power sites; 1 wind power site; 2 diesel generator sites, 1 pumped-storage plant; 1 digester-gas site; 1 biomass co-firing.
- 15860 miles of transmission lines; 1070 interchange and customer connection points
- Serves 7 states: Tennessee, Georgia, Mississippi, Alabama, North Carolina, Kentucky, Virginia
- Generates more electricity than any other public utility in the US



# Political

- Henry Ford and Senator Norris argue about public ownership of the Wilson dam in Alabama
- 25 year struggle over TVA between republicans and democrats about financing and funding. TVA asked to issue its own bonds and use its operating budget to repay the US treasury \$1 billion it had invested.
- Surrounding states and senators didn't like the fact that if TVA no longer had financial restraints it would be able to sell cheaper power to their customers
- Bill allowing TVA to issue bonds (sales area limited to areas it served in 1957)



# Economic Impact

- In 2008 attracted & retained 41k jobs
- \$5.5 billion in capital investment
- In 2008 ~half a billion \$ paid to state and local agencies in taxes
- Offers capital investment loans for new & growing businesses, small & minority business support
- \$2.5 billion in tax equivalent payment 2001-2008
- Barges on river carry 50 million tons of goods annually





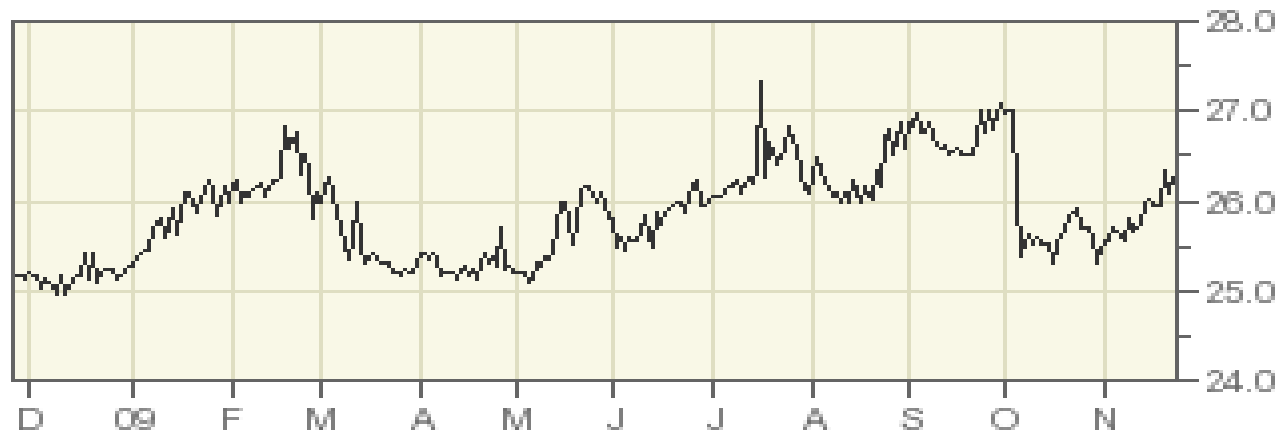
# Economic Impact 2

- Self-supporting receives no government aid
- Sells TVA bonds & notes for finance to investors in 60 nations and all states
- Bonds backed by TVA power not the government
- Bonds receive highest credit ratings from major rating agencies
- 1999 bonds interest rate reset from 5.174% to 4.5% in May 2009
- In 2008 \$22.7 billion outstanding (statutory limit of \$30 billion)
- Bonds are traded on the stock market as TVE and TVC

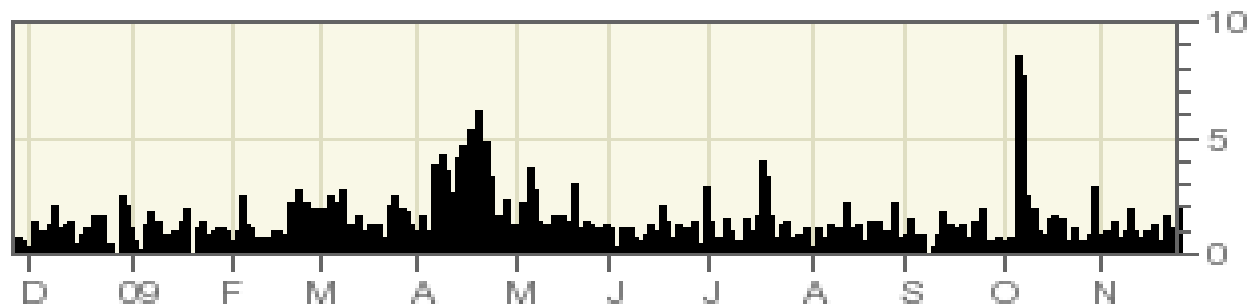


# Economic Impact 3

Stock Price in Dollars



Volume (10,000s of shares)



Source: New York Stock Exchange (TVE)



# Economic Impact 4



Source: New York Stock Exchange (TVE)

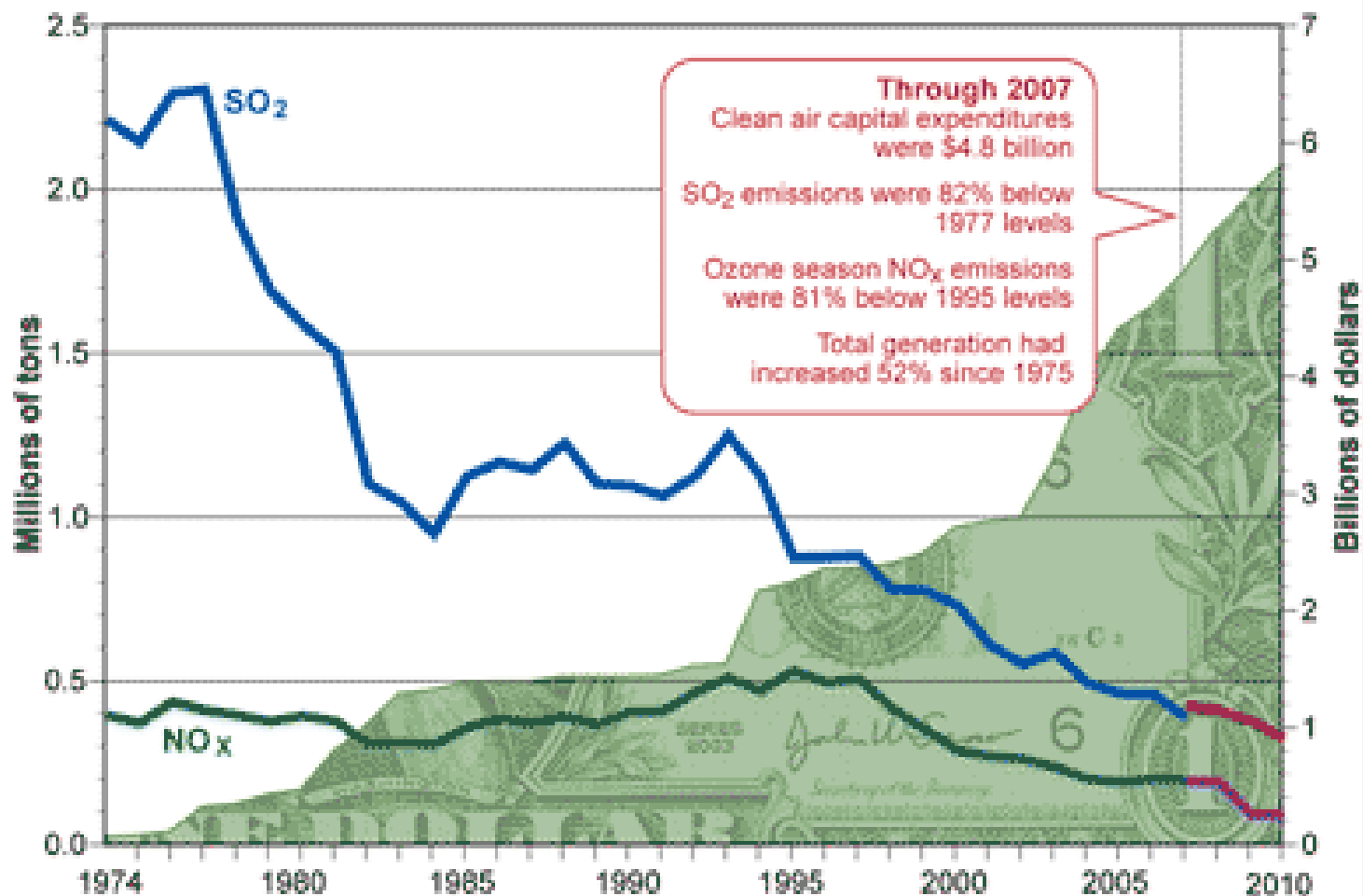


# Environmental Impact

- 49 dams + reservoirs along 652 miles of Tennessee river
- Manages 293k acres of public land
- 34 Flood control dams
- \$5.5 billion invested 1977-2010 to reduce air emissions from power plants
- Water from river system used to cool power plants



# Environmental Impact 2

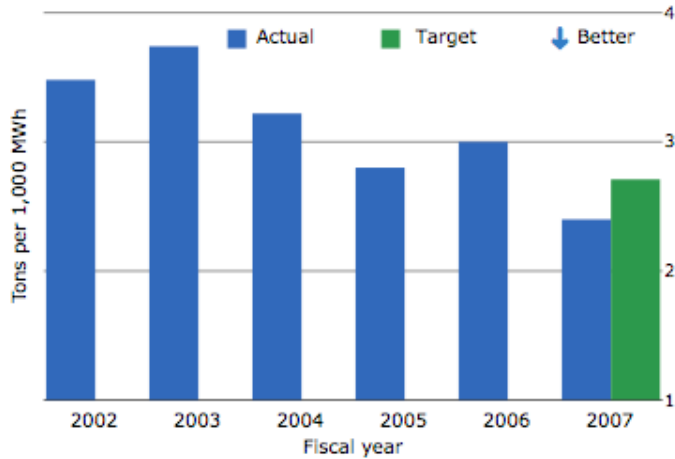


Source: [http://www.tva.gov/environment/eii/eii\\_2007.htm](http://www.tva.gov/environment/eii/eii_2007.htm)

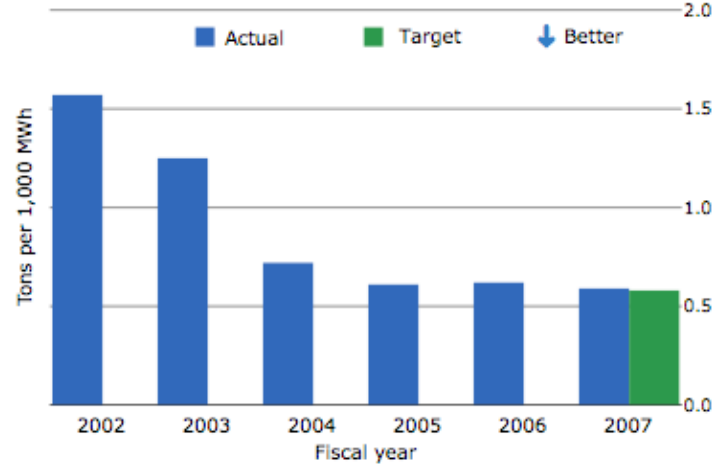


# Environmental Impact 3

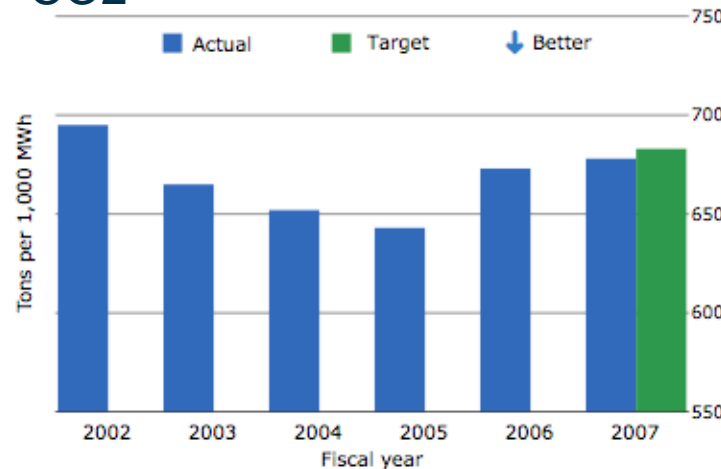
## SO<sub>2</sub>



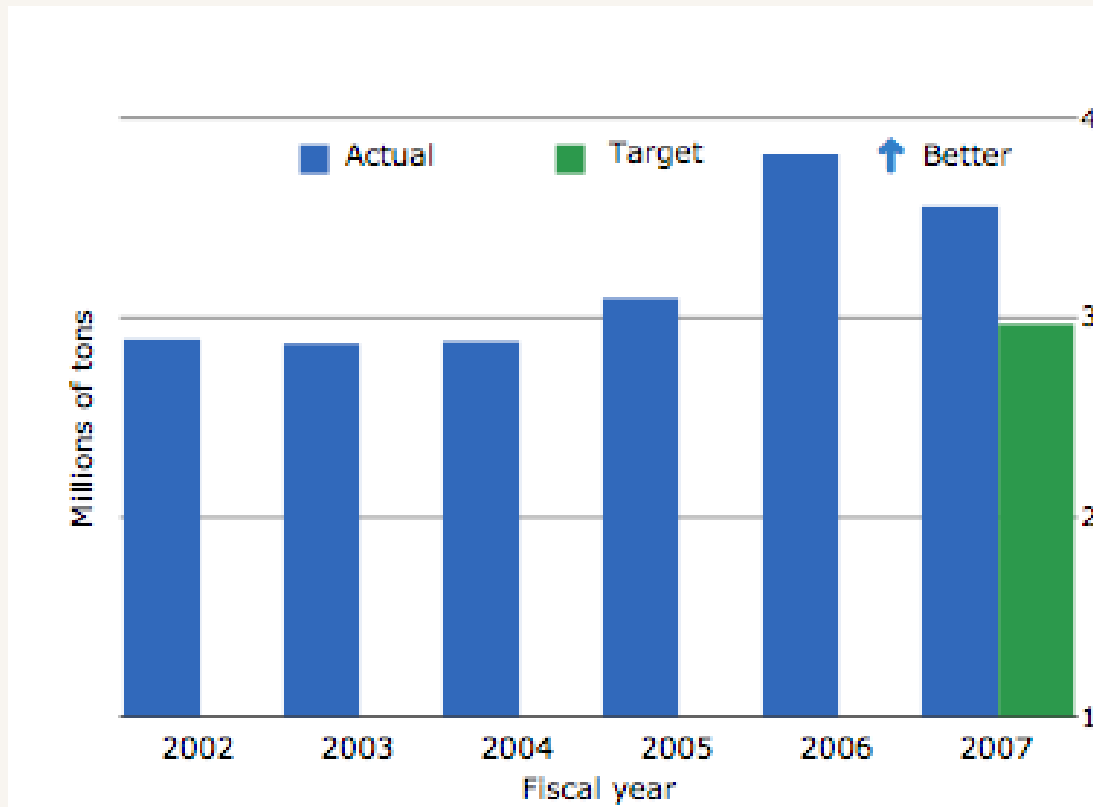
## NO<sub>x</sub>



## CO<sub>2</sub>



# Environmental Impact 4



The amount of coal byproducts recycled



# Environmental Impact 4

- Clean Water Initiative
- Clean Marina Initiative
- Clean Boating campaign
- Tail water improvements (~\$60 million)
- Reservoir ratings:
  - Reservoir ecological health
  - Stream ecological health
- Sport fishing ratings (based on the fish population)





# Social Impact

- In the 1930's ~30% of the population affected by malaria
- Development of Dams displaced 15000 families
- Cheap electricity made life easier for farmers and more productive
- Increase/ improvement in public infrastructure as more people moved into the area
- Number of women in the workforce increased
- Recognized unions for skilled and semi-skilled blue collar employees.
- A class action lawsuit was filed against the agency claiming sexual discrimination



# Recent Developments

- Coal ash spill in Roane county Tennessee (Dec 2008)
- Cleanup cost ~ \$1.2 billion
- Devastated property values
- Property buyout \$40.2 billion
- Stopped tourism + dislocation of retirees
- \$43 million to be spent on economic development
- Ratchet Bonds (bond rates can be reset after years depending on market conditions).



# Results of Recent Developments

- Renewed interest in the regulations for coal ash within the EPA and TVA
- EPA Survey of ash ponds and subsequently renovation of these ponds
- Classification of ash: hazardous/non-hazardous
- Identification of groundwater contamination
- Even with lower interest rates for ratchet bonds there has not been a decrease in the demand for the bonds



# Results of Recent Developments 2



# References

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